

WHAT IS CLAIMED AS NEW AND DESIRED TO BE SECURED BY LETTERS
PATENT OF THE UNITED STATES IS:

1. An electrophotographic photoreceptor comprising:
an electroconductive substrate;
5 a photosensitive layer located overlying the
electroconductive substrate; and
optionally a protective layer located overlying the
photosensitive layer,
wherein an outermost layer of the photoreceptor comprises
10 a filler, a binder resin and an organic compound having an acid
value of from 10 to 700 mgKOH/g.
2. The electrophotographic photoreceptor according to
Claim 1, wherein the photosensitive layer is the outermost
15 layer.
3. The electrophotographic photoreceptor according to
Claim 1, wherein the organic compound comprises a hydrophilic
group.
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4. The electrophotographic photoreceptor according to
Claim 3, wherein the hydrophilic group is a carboxyl group.
5. The electrophotographic photoreceptor according to
25 Claim 4, wherein the organic compound is an unsaturated
polycarboxylic acid compound.

6. The electrophotographic photoreceptor according to Claim 3, wherein the hydrophilic group is located at an end position of a molecule of the organic compound.

5 7. The electrophotographic photoreceptor according to Claim 1, wherein the organic compound has a number average molecular weight of from 300 to 30,000.

8. The electrophotographic photoreceptor according to Claim 1, satisfying the following relationship:

$$0.1 \leq (A \times B/C) \leq 20$$

wherein A represents a content of the organic compound in the outermost layer in units of grams, B represents the acid value of the organic compound in units of mgKOH/g, and C represents
15 a content of the filler in the outermost layer in units of grams.

9. The electrophotographic photoreceptor according to Claim 1, wherein the filler is an inorganic filler.

20 10. The electrophotographic photoreceptor according to Claim 9, wherein the inorganic filler is a metal oxide.

11. The electrophotographic photoreceptor according to Claim 10, wherein the metal oxide has a resistivity not less
25 than $10^{10} \Omega \cdot \text{cm}$.

12. The electrophotographic photoreceptor according to

Claim 10, wherein the metal oxide has a pH not less than 5 at an isoelectric point of the metal oxide.

13. The electrophotographic photoreceptor according to
5 Claim 9, wherein the inorganic filler has a surface that is treated with a surface treating agent.

14. The electrophotographic photoreceptor according to
Claim 13, wherein the surface is a surface treated with a surface
10 treating agent selected from the group consisting of titanate coupling agents and aluminum coupling agents.

15. The electrophotographic photoreceptor according to
Claim 13, wherein a ratio (W_s/W_f) of a weight (W_s) of the surface
15 treating agent to a weight (W_f) of the filler is from 0.02 to 0.30.

16. The electrophotographic photoreceptor according to
Claim 1, wherein the filler has an average primary particle
20 diameter of from 0.01 μm to 0.9 μm .

17. The electrophotographic photoreceptor according to
Claim 1, wherein the filler is included in the outermost layer
in an amount of from 0.1 % to 50 % by weight based on total solid
25 components of the outermost layer.

18. The electrophotographic photoreceptor according to

Claim 1, wherein the binder resin comprises a resin selected from the group consisting of polycarbonate resins and polyarylate resins.

5 19. The electrophotographic photoreceptor according to Claim 1, wherein the binder resin comprises a charge transport polymer.

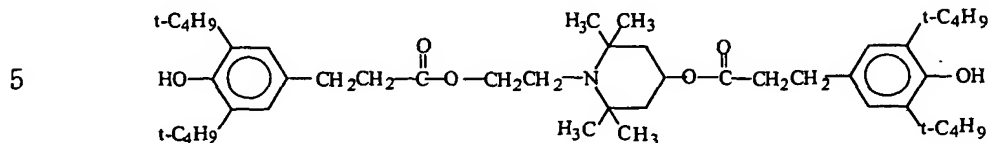
10 20. The electrophotographic photoreceptor according to Claim 1, wherein the outermost layer further comprises a charge transport material.

15 21. The electrophotographic photoreceptor according to Claim 20, wherein the photosensitive layer comprises a charge transport material, and wherein the charge transport material in the outermost layer has an ionization potential not greater than an ionization potential of the charge transport material in the photosensitive layer.

20 22. The electrophotographic photoreceptor according to Claim 1, wherein the outermost layer further comprises an antioxidant.

25 23. The electrophotographic photoreceptor according to Claim 22, wherein the antioxidant comprises both a hindered phenol structure and a hindered amine structure.

24. The electrophotographic photoreceptor according to Claim 23, wherein the antioxidant comprises a compound having the following formula:



25. The electrophotographic photoreceptor according to Claim 22, wherein the antioxidant is included in the outermost layer in an amount of from 0.1 to 20 % by weight based on the filler in the outermost layer, and wherein the amount is greater than an amount of the organic compound in the outermost layer.

26. A coating liquid for an outermost layer of an electrophotographic photoreceptor, comprising:

a filler;

an organic compound having an acid value of from 10 to 700 mgKOH/g;

a binder resin; and

plural organic solvents.

27. The coating liquid according to Claim 26, prepared by mixing the filler, the organic compound, the binder resin and plural organic solvents using a ball mill containing alumina balls.

28. A method for preparing an electrophotographic

photoreceptor, comprising:

mixing a filler, an organic compound having an acid value of from 10 to 700 mgKOH/g, and a binder resin to prepare an outermost layer coating liquid;

5 forming a photosensitive layer overlying an electroconductive substrate; and

coating the outermost layer coating liquid overlying the photosensitive layer by a spray coating method and drying the coated liquid to form an outermost layer overlying the
10 photosensitive layer.

29. The method according to Claim 28, wherein the outermost layer coating step is performed at least twice.

15 30. An image forming method comprising:

charging a photoreceptor;

irradiating the photoreceptor with light to form an electrostatic latent image on a surface of the photoreceptor;

developing the electrostatic latent image with a toner
20 to form a toner image on the photoreceptor;

transferring the toner image onto a receiving material optionally via an intermediate transfer medium,

wherein the photoreceptor comprises:

an electroconductive substrate;

25 a photosensitive layer located overlying the electroconductive substrate; and

optionally a protective layer located overlying the

photosensitive layer,

wherein an outermost layer of the photoreceptor comprises a filler, a binder resin and an organic compound having an acid value of from 10 to 700 mgKOH/g.

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31. The image forming method according to Claim 30, wherein the photosensitive layer is the outermost layer.

32. The image forming method according to Claim 30,
10 wherein the irradiating step includes digitally irradiating light using at least one of a laser diode and a light emitting diode.

33. An image forming apparatus comprising:
15 a photoreceptor;
a charger configured to charge the photoreceptor;
an image irradiator configured to irradiate the photoreceptor with light to form an electrostatic latent image on the photoreceptor;
20 an image developer configured to develop the electrostatic latent image with a toner to form a toner image on the photoreceptor; and

an image transferer configured to transfer the toner image onto a receiving material optionally via an intermediate
25 transfer medium,

wherein the photoreceptor comprises:
an electroconductive substrate;

a photosensitive layer located overlying the electroconductive substrate; and

optionally a protective layer located overlying the photosensitive layer,

5 wherein an outermost layer of the photoreceptor comprises a filler, a binder resin and an organic compound having an acid value of from 10 to 700 mgKOH/g.

34. The image forming apparatus according to Claim 33,
10 wherein the photosensitive layer is the outermost layer.

35. The image forming apparatus according to Claim 33, further comprising one of a laser diode and a light emitting diode configured to emit light used by the image irradiator to
15 digitally irradiate the photoreceptor.

36. The image forming apparatus according to Claim 33, wherein the charger is a charging roller.

20 37. The image forming apparatus according to Claim 36, wherein the charging roller is configured to charge the photoreceptor while close to but not touching an image forming area of the surface of the photoreceptor.

25 38. The image forming apparatus according to Claim 36, wherein the charger is configured to charge the photoreceptor by applying a DC voltage overlapped with an AC voltage to the

surface of the photoreceptor.

39. The image forming apparatus according to Claim 33,
further comprising:

5 a lubricant applicator configured to apply a lubricant
to the surface of the photoreceptor.

40. The image forming apparatus according to Claim 39,
wherein the lubricant comprises at least one of zinc stearate
10 and fluorine-containing compounds.

41. The image forming apparatus according to Claim 33,
wherein the toner comprises a lubricant.

15 42. The image forming apparatus according to Claim 41,
wherein the lubricant comprises at least one of zinc stearate
and fluorine-containing compounds.

43. The image forming apparatus according to Claim 33,
20 including the intermediate transfer medium, four sets of the
photoreceptor, and four sets of the image developer, wherein
each of the four sets of image developers includes a cyan toner,
a magenta toner, a yellow toner and a black toner to form a cyan
toner image, a magenta toner image, a yellow toner image and
25 a black toner image on the respective photoreceptor in parallel,
wherein the cyan, magenta, yellow and black toner images are
transferred on the intermediate transfer medium to form a full

color image, and wherein the full color toner image is transferred on the receiving material.

44. A process cartridge comprising:

- 5 a photoreceptor; and
- a housing configured to contain the photoreceptor therein,
- wherein the photoreceptor comprises:
- an electroconductive substrate;
- 10 a photosensitive layer located overlying the electroconductive substrate; and
- optionally a protective layer located overlying the photosensitive layer,
- wherein an outermost layer of the photoreceptor
- 15 comprises a filler, a binder resin and an organic compound having an acid value of from 10 to 700 mgKOH/g.

45. The process cartridge according to Claim 44, wherein the photosensitive layer is the outermost layer.

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46. The process cartridge according to Claim 44, further comprising at least one of:

- a charger configured to charge the photoreceptor;
- an image irradiator configured to irradiate the
- 25 photoreceptor with light to form an electrostatic latent image on the photoreceptor;
- an image developer configured to develop the

electrostatic latent image with a toner to form a toner image on the photoreceptor;

an image transferer configured to transfer the toner image onto a receiving material optionally via an intermediate
5 transfer medium;

a cleaner configured to clean a surface of the photoreceptor; and

a lubricant applicator configured to apply a lubricant to the surface of the photoreceptor.

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